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ABSTRACT

This paper provides a survey of evaluative instruments which measure teachers' knowledge of the process of reading. These tests can be divided into three categories: those which measure specific skills in teaching reading, those which appraise the diagnostic ability of the teacher, and those which assess the teacher's knowledge of reading practices and instructional techniques. Strengths and weaknesses of such instruments as Durkin's Phonics Test for Teachers, Wallen's Competency in Teaching Reading, and Artley and Hardin's Inventory of Teacher Knowledge of Reading are discussed. For elementary teachers, only one test was found to be comprehensive in scope. (KS)

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## MEASUREMENT OF TEACHER KNOWLEDGE OF READING

### Introduction

The latest trend in teacher education is towards competency-based programs which focus on the specific knowledges, skills, and attitudes that teachers ought to develop in order to perform well on the job. One area of teach competencies is knowledge of the subject-matter. Cooper (1973) calls this knowledge competency. Several writers have emphasized the mastery of subject-matter as an important component in teacher preparation. Bush (1954) says that students like teachers whom they regard as high in knowledge of subject; and pupil liking of teachers is related to pupil liking for the subject. Miller and Miller (1971) asked school administrators to rank order a list of 17 items representing personal qualities and professional competencies considered essential for teaching. There was unanimous agreement on the knowledge of the subject-matter in the teaching field as being most important for a successful classroom teacher. Vanderwerf (1958) says that there is some evidence to indicate that a relationship exists between what a teacher knows about his field and his success in teaching. Wade's study (1960) provides some evidence that teacher knowledge of reading skills and its application was related to pupils' gain in reading achievement. Menges (1975) also recommends knowledge of the subject-matter and its application as two important aspects of professional readiness.

Although experts seem to agree that knowledge of reading is important for teaching reading, the development of instruments for measuring teacher knowledge of reading has received limited attention from researchers. The major reason for this seems to lie in the disagreement among experts on such issues as the definition of reading, skills involved in reading, and measurement of comprehension. For example, the Current Issues in Reading (Smith, 1969) demonstrates that opinion is divided on questions like: Is there a sequence of reading skills; and which approach (programmed, linguistic, basal, i.t.a.) is more effective? Robinson (1971) has also pointed out that we do not have a standard terminology to discuss reading problems and that our knowledge of the reading process is inadequate. Nevertheless, there have been a few attempts at developing instruments to measure teacher knowledge of reading. These instruments can be divided into three categories: (i) measurement of specific skills in teaching reading, (ii) appraisal of the diagnostic ability of the teacher, and (iii) assessment of teacher knowledge of reading practices and instructional techniques. Most of the instruments are intended for elementary teachers. This writer developed a test to measure teacher knowledge of reading at the secondary level. A brief description of these instruments follows.

Instruments for Measuring Specific Skills in Reading

Teacher knowledge of phonics and structural analysis has been investigated by several researchers. Schubert (1959) was interested in finding out if the elementary and secondary teachers possessed sufficient knowledge of structural and phonetic principles to help students who face problems in word analysis. He developed an informal quiz consisting of 10 questions based on an understanding of these concepts. He administered the quiz to 80 elementary teachers and 42 secondary teachers and reported that a substantial number of them did not possess knowledge of certain basic principles of word analysis.

Spache and Baggett (1965) report that Gagon used an informal Rogers Test of Phonic Ability to measure the status of phonic knowledge of elementary teachers in the State of Utah. This test was not available to this writer and as such no comments on this are possible. Another test also not available for review was developed by Farinella (1960). This test of phonetic and structural analysis was administered to 394 teachers in grades one through six. Results indicated that an alarmingly large number of teachers were deficient in their knowledge of essential word-attack skills.

One of the early tests of phonic generalizations which received attention from some investigators was developed by Aaron (1960). Aaron was interested in assessing teacher and prospective teacher knowledge of phonic generalizations. He examined teacher's guidebooks which accompany basal readers

and selected eight principles which are commonly taught in grades two and three. Based on these principles, he constructed a 60-item multiple-choice test using nonsense words. By means of the Hoyt Analysis of Variance Method of Test Reliability, he obtained a reliability co-efficient of .98. He administered the test to a group of 293 persons enrolled in an introductory course in the teaching of reading taught at the University of Georgia. There were 104 persons with one or more years of teaching experience and 189 with no teaching experience in the group. Results indicated that very few subjects were well-grounded in phonics principles. As expected, persons with teaching experience performed better than those without similar experience. Spache and Baggett (1965) used a modified version of Aaron's test with graduate students and inservice teachers pursuing graduate work and found that they were generally weak in the areas of phonics and syllabication. Ilika (1968) reports the results of Aaron's test administered to undergraduate and graduate students and classroom teachers over a five-year period and concluded that there was an improvement in teacher's knowledge of vowel generalizations.

Ramsey (1962) developed a test of phonics and other word recognition skills in order to determine the extent of knowledge possessed by elementary student-teachers in this area. There were 85 items in the test. The first 30 items were designed to measure an understanding of the basic sound-symbol relationships and required students to spell unfamiliar syllables

pronounced by the examiner. The remaining 55 items were cast in multiple-choice format and covered areas such as professional terminology used in phonics, phonics generalizations, and application of principles of syllabication.

Another test to determine the extent to which teachers in grades one through six possessed knowledge of basic skills in reading was developed by Browman (1962). This test consists of areas such as the sequence of basic reading skills, grade levels at which they are taught, phonics and syllabication generalizations, and definitions related to word-recognition skills. These areas were selected because they were common to the textbooks in use for teaching reading in elementary schools. The researcher stated that by making the instrument objective, inter-scorer reliability was achieved.

The only test of phonics which is available commercially was developed by Durkin (1964). This test, called the Phonics Test for Teachers, is based on the following skills:

> Syllabications, vowels, vowel generalizations, sounds of c and g, digraphs, dipthongs, sounds of oo, sounds of qu, and sounds of x.

Durkin (1965) reports the results of a survey in which her test was administered to 603 students enrolled in reading methods courses in different parts of the States. She found that teachers in training generally lacked knowledge of phonics principles.

The author claims that the test was specifically designed for use in reading methods courses to help students identify what they know and what they do not know about phonics. This

test can be considered as an informal diagnostic tool as no data on validity and reliability is provided. Reliability is threatened by the fact that in some sections of the test there is only one item intended to measure a particular phonic skill. It seems that the test under review can be used as a screening device in providing needed phonic instruction for preservice and inservice teachers.

Instruments for the Appraisal of the Diagnostic Ability of the Teacher

Two tests developed specifically to measure the diagnostic ability of teachers were located. One was developed by Burnett (1961) who considered teaching as problem-solving or decision-making and identified five levels in this operation. The first level problems call for the examinee to pick critical information from a pool of data. The second level problems require selecting a means of securing additional data. The third requires the interpretation of data. At the fourth level, the examinee is required to make recommendations for improving instruction. At the fifth level all the available data are supplied to the examinee and he is asked to evaluate his recommendations made at level four. The test consists of two problems at each level, based on the reading performance and other information of a third grade boy and a fifth grade girl. Burnett administered his test to students, teachers, and reading specialists and obtained a split-half reliability

coefficients of .33, .76, and .84 for the three groups. Analysis of his data showed that neither teaching experience beyond the third year nor the master degree held by subjects resulted in increased problem-solving proficiency of elementary school teachers.

The second test was developed by Thomas (1975). She constructed a criterion-referenced test to measure the ability of elementary school teachers to choose and interpret data for assessment in reading. Her test consists of 70 items and is divided into four parts. The first part has 18 items related to determining reading levels and grouping techniques. The second part has 12 items which deal with reading expectancy level and reading achievement. The third part contains 22 items which purport to measure and interpret student progress in reading. The fourth part includes 18 items which test techniques for determining reading readiness.

Thomas established the content validity by specifying the knowledge and skills to be measured. As a check on content validity, experts were asked to make independent evaluation of the test blueprint and test exercises in terms of importance, relevance, and congruence. The reliability was determined by the Livingston method which is a new technique and has not become an established procedure yet. The reliability was found to be .98 at one standard error of measurement.

Although the areas covered are pertinent for diagnostic teaching of reading at the elementary level, the test is lengthy and as such may not find favor with practitioners.

The design of the test is also cumbersome. The examinee has to read footnotes provided with some of the items or check the additional data provided at the end of the test to answer some questions. Moreover, some items require one answer to be marked while others require more than one.

## Instruments for Assessing Teacher Knowledge of Reading Practices and Instructional Techniques

Three instruments which cover rather broad areas of reading are reported in the literature; two of these are recent and are available commercially.

The earlier test in this category was developed by Wade (1960) who was interested in measuring the following skills:

selecting books of proper level of difficulty
placing children in homogeneous groups
judging the amount of reading gains made by pupils
diagnosing specific reading deficiencies
diagnosing and correcting phonic and syllabication errors
categorizing a child's word errors
recognizing the goals of workbook exercises

In order to test these skills he used oral reading activity from an audio-tape and paper-and-pencil questions. Wade does not provide adequate information about the content validity of his test. However, he discusses the results of his test administered to students, teachers, and reading specialists. He found, as expected, that students achieved the lowest and reading specialists achieved the highest. He also compared a few teachers' scores with their pupils' gain and found the relationship inconsistent.

Harp and Wallen (1972) prepared a 28-item multiple-choice test as part of the Instructor's Guide to accompany Wallen's Competency in Teaching Reading. Their test has four sections: testing recognition, testing comprehension, teaching recognition, teaching comprehension. The reliability coefficient is reported to be .72. A good feature of this test is that it is available in three parallel forms, A, B, and C. However, its scope is limited in terms of the knowledge areas required in teaching reading.

The most widely known instrument for measuring teacher knowledge of reading is called the Inventory of Teacher Knowledge of Reading and was developed by Artley and Hardin (1975). This test contains 95 multiple-choice items. The brief manual accompanying the test indicates that the test covers the following areas:

a. The reading act
b. Preparation for reading
c. Word identification
d. Comprehension and critical reading
e. Reading in the content areas
f. Reading interests and tastes
g. Corrective procedures

The manual does not list how many and which items belong to each area. The reliability coefficient by Kuder-Richardson formula 20 is reported to be .92. The authors further report that factor analysis indicated that the seven areas from which the items were drawn were not identifiable as discrete factors.

Kingston and his associates (1975) attempted a revalidation of Inventory of Teacher Knowledge of Reading. They administered the Inventory to undergraduate students, teachers and reading specialists. The mean score of the reading specialists was the highest (73.28) and that of the undergraduate students without reading courses was the lowest (47.38). The factor analysis by these researchers failed to reveal the seven components the Inventory is reported to be composed of.

Koenke (1975) also analyzed the results of this Inventory administered to 180 undergraduate female students and 60 experienced teachers. He found that the freshmen achieved lower than the juniors who were outperformed by the seniors. The experienced teachers did better than the seniors. However, the difference in their mean score was not significant.

The Inventory can be used as a criterion-referenced measurement in that it discriminates those with a reading background from those without. Thus it can be employed in evaluating the effectiveness of preservice and inservice programs in elementary reading instruction. Rorie (1975) has mentioned that 30,000 copies of the first edition of the Inventory were sold in 1972 and 1973 which indicates its popularity.

In order to measure teacher knowledge of reading at the secondary level, Narang (1976) developed a 45-multiple-choice-items test based on the following content:

| | | | |
|---|---|---|---|
| I. | General Background | No. of items | 10 |
| | a. Reading and Reading Problems | | (7 items) |
| | b. Nature and Difficulty of Materials | | (3 items) |
| II. | Reading Skills | No. of items | 11 |
| | a. Word Recognition and Vocabulary | | (4 items) |
| | b. Comprehension | | (4 items) |
| | c. Study Skills | | (3 items) |
| III. | Instructional Strategies | No. of items | 9 |
| | a. Motivational Techniques | | (3 items) |
| | b. Lesson Plans and Study Guides | | (6 items) |
| IV. | Measurement and Evaluation | No. of items | 15 |
| | a. Reading Tests | | (6 items) |
| | b. Informal Techniques | | (4 items) |
| | c. Test Interpretation | | (5 items) |

He administered the test to 124 teachers and 64 students in secondary education. Their scores ranged from 11 to 40 with a mean of 24.5 and a standard deviation of 6.3. The reliability coefficient obtained by KR-20 formula was .76.

## Summary

The tests developed for measuring teacher knowledge of reading were reviewed and their strenths and weaknesses were pointed out. Some of the tests measure teacher knowledge of phonics and syllibication, while others assess the diagnostic ability of the teacher. For elementary teachers, only one test was found to be comprehensive in scope. At the secondary level, a test to measure teacher knowledge of reading was discussed.

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